



US005126723A

United States Patent [19]

Long et al.

[11] **Patent Number:** **5,126,723**[45] **Date of Patent:** **Jun. 30, 1992**[54] **KEYBOARD-MOUNTED CURSOR
POSITION CONTROLLER**[75] Inventors: **Shyh L. Long**, Geylang; **Hariram Ramachandran**; **Soo H. Quek**, both of Singapore, all of Singapore[73] Assignee: **Hewlett-Packard Company**, Palo Alto, Calif.[21] Appl. No.: **448,761**[22] Filed: **Dec. 11, 1989**[51] Int. Cl.⁵ **G09G 1/00**[52] U.S. Cl. **340/710; 340/706;
74/471 XY**[58] Field of Search **340/706, 709, 710, 711;
74/741 XY**[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Ulysses Weldon*Assistant Examiner*—Matthew Luu*Attorney, Agent, or Firm*—Roland I. Griffin; Alan H. Haggard[57] **ABSTRACT**

A keyboard mounted, hand-operable input device for controlling the movement of a marker on a computer display is described and includes a tray which is elongated along a first axis, has right and left closed ends and is mounted for translational movement along its first axis. A hand-operable roller is rotatably mounted in the tray and is movable therewith. A rotary encoder is mounted on and movable with the tray and is maintained in engagement with the roller so that it provides signals indicative of the roller's rotary motion. A translational encoder is movable with the tray and provides signals indicative of translational movements of the tray. By directly coupling the roller to the rotary encoder and having both move with the tray, accurate rotary motion indications are thereby derived.

11 Claims, 4 Drawing Sheets